

## CONTINUING EDUCATION TEST #1

# Energy-Weighted Acquisition

For each of the following questions, select the best answer. Then circle the number on the CE Tests Answer Sheet that corresponds to the answer you have selected. Keep a record of your responses so that you can compare them with the correct answers, which will be published in the next issue of the *Journal*. Answers to these test questions should be returned on the Answer Sheet no later than August 15, 1995. Supply your name, address, and VOICE number in the spaces provided on the Answer Sheet. Your VOICE number appears on the upper left hand corner of your *Journal* mailing label. No credit can be recorded without it. A 70% correct response rate is required to receive 0.1 CEU credit for this article. Members participating in the continuing education activity will receive documentation on their VOICE transcript, which is issued in March of each year. Nonmembers may request verification of their participation but do not receive transcripts.

**A.** *Methods used to reduce the contribution of scattered radiation to a final image include: \_\_\_\_\_*

- 101. off-peak imaging
- 102. "scatter" image subtraction
- 103. using two windows to calculate scatter ratio
- 104. holospectral imaging of the total spectrum
- 105. all of the above

**B.** *Off-peak imaging is the technique in which the pulse height analyzer window is centered \_\_\_\_\_ % above the energy of the primary photon.*

- 106. 1
- 107. 2
- 108. 5
- 109. 10
- 110. 15

**C.** *Energy-weighted acquisition (EWA) is a technique for scatter correction in which every detected photon is given a weighting factor which is energy \_\_\_\_\_.*

- 111. dependent
- 112. independent
- 113. irrelevant
- 114. divalent
- 115. none of the above

**D.** *The EWA technique assigns small positive values to energies around the photopeak.*

- 116. true
- 117. false

**E.** *The WAM is an energy weighting technique which uses two photo-peak windows to determine the scatter contribution from the ratio of the counts in each window.*

- 118. true
- 119. false

**F.** *The WAM allows the simultaneous acquisition of:*

- 120. conventional and energy-weighted images consecutively
- 121. conventional and energy-weighted images simultaneously
- 122. holospectral and energy-weighted images consecutively
- 123. holospectral and energy-weighted images simultaneously

**G.** *EWA provides improved performance for which of the following physical parameters?*

- 124. planar image contrast
- 125. planar spatial resolution
- 126. SPECT image contrast
- 127. attenuation correction
- 128. all of the above.

**H.** *In the clinical setting, when using EWA, the count rate is typically quantitatively inaccurate.*

- 129. true
- 130. false

**I.** *EWA was devised to remove the influence of scattered photons by using weighting factors which:*

- 131. vary with different energies in the window
- 132. are constant regardless of energy
- 133. are negative for below peak energies
- 134. are positive for above peak energies
- 135. none of the above

**J.** *The noise characteristics of EWA acquired images are probably of little clinical significance.*

- 136. true
- 137. false

**K.** *Significant scatter reduction can be achieved using weighting functions:*

- 138. for a single organ depth
- 139. only for bone imaging
- 140. over a range of organ depths
- 141. 138 and 140 of the above
- 142. none of the above

**L.** *Conventional gamma cameras accept photons within a fixed energy window centered on the photopeak.*

- 143. true
- 144. false

**M.** *Weighting functions of WAM result in fractions of counts which are stored in two memory buffers.*

- 145. true
- 146. false

Please see end of second CE test for answer sheet and answers to the March 1995 CE test.

## An Introduction to the Internet, Part 1

**N.** *The Internet is a:*

- 147. neural network
- 148. local area network
- 149. wide area network
- 150. world-wide network

**O.** *The goal(s) of the ARPANET was/were to:*

- 151. share resources between different types of computers
- 152. ensure reliable communications
- 153. use satellites for communications
- 154. establish a defense system
- 155. 151 and 152 of the above

**P.** *The basis for all Internet communications is the:*

- 156. TCP/IP protocol
- 157. TNVT protocol
- 158. NTNVT protocol
- 159. none of the above

**Q.** *Of the following, which are computer networks:*

- 160. ARPANET
- 161. ANSNET
- 162. NSINET
- 163. ALTERNET
- 164. all of the above

**R.** *The basic organizational unit on the Internet is the:*

- 165. computer
- 166. network
- 167. station
- 168. Internic
- 169. none of the above

**S.** *There are \_\_\_\_\_ top level domains recognized in the United States.*

- 170. five
- 171. seven
- 172. nine
- 173. eleven

**T.** *Of the following, which are top level domains on the Internet?*

- 174. CON
- 175. EDU
- 176. NWU
- 177. MIT
- 178. all of the above

**U.** *The naming scheme for computers on the Internet includes the following in order: computer name, subnetwork name, network name and top level domain.*

- 179. true
- 180. false

**V.** *The numbering scheme for computers on the Internet includes the network address and the subnetwork address in the IP number.*

- 181. true
- 182. false

**W.** *Of the following, which are Internet protocols?*

- 183. TCP
- 184. IP
- 185. TELNET
- 186. FTP
- 187. all of the above

**X.** *The ISO is the international organization charged with setting communication standards for the Internet.*

- 188. true
- 189. false

**Y.** *The TCP protocol:*

- 190. adds data segments together
- 191. breaks data into segments
- 192. adds a header to each segment
- 193. adds data headers together
- 194. 190, 191 and 192 of the above

**Z.** *The TCP protocol headers contain which of the following information?*

- 195. type of application program
- 196. the segment number
- 197. data delivery instructions
- 198. 195 and 196 of the above
- 199. none of the above

**AA.** *Routers are communication devices that connect networks and direct packets to their destinations.*

- 200. true
- 201. false

**BB.** *Each data packet contains all of the necessary information to deliver it to its final destination including a predetermined route.*

- 202. true
- 203. false

**CC.** *Packet switching allows \_\_\_\_\_ message(s) to be transmitted on a circuit at the same time.*

- 204. only 1
- 205. only 2 of the same type
- 206. not more than 5
- 207. many different
- 208. none of the above

**DD.** *The method of data transmission on the Internet is called circuit switching.*

- 209. true
- 210. false

**EE.** *The IP protocol is responsible for routing messages between computers.*

- 211. true
- 212. false